



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

11/10

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/536,472	05/25/2005	Pascal Castro	17198/004001	6920
22511	7590	04/26/2007	EXAMINER	
OSHA LIANG L.L.P. 1221 MCKINNEY STREET SUITE 2800 HOUSTON, TX 77010			LIVEDALEN, BRIAN J	
			ART UNIT	PAPER NUMBER
			2878	
SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE		
3 MONTHS	04/26/2007	PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/536,472	CASTRO, PASCAL
	<b>Examiner</b>	<b>Art Unit</b>
	Brian J. Livedalen	2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 26 February 2007.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-27 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) 5,9,10,15-17 and 23-26 is/are allowed.  
 6) Claim(s) 1-4, 7, 8, 11, 12, 18, 19, and 27 is/are rejected.  
 7) Claim(s) 6,13,14 and 20-22 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 04 August 2006 is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
     1. Certified copies of the priority documents have been received.  
     2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
     3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)	5) <input type="checkbox"/> Notice of Informal Patent Application
Paper No(s)/Mail Date _____. _____	6) <input type="checkbox"/> Other: _____

## DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/26/2007 has been entered.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 11, 19, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leighton et al. (4740709) in view of Krieg et al. (4902137) and in further view of Green (WO 98/55849).

In regard to claim 1, Leighton discloses (fig. 1) a process for detection of gas bubbles in a liquid adapted to a device having a light source (11), a light detector (12); wherein the light source and light detector are immersed in the liquid; and a data controlling and processing unit (not shown) (column 5, lines 15-18, column 3, lines 64-68, column 4, lines 40-55). Note, Leighton disclosed performing measurements, a data

controlling and processing unit would be needed to perform these measurements, and is therefore inherent. Leighton fails to disclose the data controlling and processing unit being linked to a client system. However, Krieg discloses a liquid measurement apparatus that has data controlling and processing unit linked to a client system (30) (column 5, lines 26-51, column 6, lines 10-24). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a client system to make the measurement information more accessible to the user. Leighton further discloses emitting light from the light source and continuously detecting the optical density of the liquid but is not explicit regarding the steps of measurement (column 3, lines 64-66). However, Krieg discloses a measurement system having the steps of acquiring successive measurements of light intensity perceived by the light detector and calculating a variation between two successive measurements of the light intensity (column 7, lines 12-20, column 8, lines 55-58). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the method as taught by Krieg in order to simply determine a change in the optical density of the liquid. Leighton in view of Krieg fails to disclose the processing being used in a water circuit for cooling an internal combustion engine. However, Green teaches employing an optical fluid measurement system to a cooling system for a gasification unit (abstract, page 1, lines 4-7). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the invention of Leighton in view of Krieg in a coolant system as taught by Greene, in order to detect leaks within the cooling system.

In regard to claim 2, Leighton in view of Krieg discloses in Krieg that the process further compares the variation in the successive measurements to a predefined threshold value S (column 7, lines 12-20).

In regard to claim 11, Leighton discloses (fig. 5) that the light source and the light detector are arranged noticeably orthogonally, acquiring successive measurements of the intensity of light reflected from the surface of gas bubbles in a direction noticeably orthogonal to the direction of incidents toward the detector (column 5, lines 15-18, column 6, lines 54-62).

In regard to claim 19, Leighton discloses (fig. 1) that the source and the light detector are noticeably opposite each other, acquiring successive measurements of light intensity deflected towards the light detector should the case arise in the presence of bubbles due to the diffraction index differences between the liquid and the gas constituting the bubbles at the level of the surface of the bubbles (column 5, lines 15-18, column 4, lines 40-55).

In regard to claim 27, Leighton discloses (fig. 1) a process for detection of gas bubbles in a liquid adapted to a device having an emission means (11), a light detection means (12); wherein the light emission means and light detection means are immersed in the liquid; and a data controlling and processing means (not shown) (column 5, lines 15-18, column 3, lines 64-68, column 4, lines 40-55). Note, Leighton disclosed performing measurements, a data controlling and processing means would be needed to perform these measurements, and is therefore inherent. Leighton further discloses emitting light from the light emission means and continuously detecting the optical

density of the liquid but is not explicit regarding the steps of measurement (column 3, lines 64-66). However, Krieg discloses a measurement system with a data controlling and processing means for acquiring successive measurements of light intensity perceived by the light detector and calculating a variation between two successive measurements of the light intensity (column 7, lines 12-20, column 8, lines 55-58). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the method as taught by Krieg in order to simply determine a change in the optical density of the liquid. Leighton in view of Krieg fails to disclose the processing being used in a water circuit for cooling an internal combustion engine. However, Green teaches employing an optical fluid measurement system to a cooling system for a gasification unit (abstract, page 1, lines 4-7). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the invention of Leighton in view of Krieg in a coolant system as taught by Green, in order to detect leaks within the cooling system.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leighton et al. (4740709) in view of Krieg et al. (4902137) and Green (WO 98/55849) as applied to claim 2, and in view of Zweighaft (4885676).

In regard to claim 3, Leighton in view of Krieg and Green discloses a process for detection that compares a variation between two successive measurements with a threshold. Leighton in view of Krieg and Green fails to use the comparison to perform a counting operation. However, Zweighaft discloses a detection apparatus that takes the

variation between two measurements and compares it to a threshold and when the variation is greater than the threshold it increments an alarm counter by a predefined value; and when the variation is not greater than the threshold it decrements an alarm counter by a predefined value (column 1, line 47 – column 2, line 31). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the counting process as taught by Zweighaft to increase the stability and accuracy of the measurement system.

In regard to claim 4, Leighton in view of Krieg, Green and Zweighaft discloses a step of sending to the client system information indicating that a bubble content is greater than an authorized maximum content when the warning counter exceeds a predefined value known as the alarm value (Krieg: column 7, lines 21-32, Zweighaft: column 2, lines 15-31).

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leighton et al. (4740709) in view of Krieg et al. (4902137) and Green (WO 98/55849) as applied to claim 1, and in view of Kraft et al. (5508521).

In regard to claims 7 and 8, Leighton in view of Krieg and Green discloses a detection process as set forth above. Leighton in view of Krieg and Green remains silent regarding averaging the measurements and sending the average values to a client system. However, Kraft teaches averaging successive measurements in a liquid measurement system and sending it to a client system (column 2, lines 13-26, column 3, lines 39, 40). It would have been obvious to one of ordinary skill in the art at the time

the invention was made to average the measurements and send the information to a client system in order to detect the change in the optical density on a larger scale.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leighton et al. (4740709) in view of Krieg et al. (4902137) and Greene (WO 98/55849) as applied to claim 1, and in view of de Lasa et al. (4659218).

In regard to claim 12, Leighton in view of Krieg and Green discloses a detection process as set forth above. Leighton discloses detecting light reflected from bubbles, but Leighton in view of Krieg and Green remains silent regarding placing the light source and detector adjacent to one another. However, de Lasa discloses (fig. 3) placing the light source (58 and 52) and detector (57 and 52) adjacent to one another. It would have been obvious to one of ordinary skill in the art at the time the invention was made to place the detector and light source adjacent to one another in order to better detect light reflected from obstructions.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leighton et al. (4740709) in view of Krieg et al. (4902137) and Green (WO 98/55849) as applied to claim 1, and in view of de Klein (6315955).

In regard to claim 18, Leighton in view of Krieg and Green discloses a detection process as set forth above. Leighton discloses detecting light reflected from bubbles, but Leighton in view of Krieg and Green remains silent regarding using a light source with a specific wavelength. However, Klein teaches using a light source with a specific

wavelength so that certain elements will have improved reflectivity (column 26, lines 20-24). It would have been obvious to one of ordinary skill in the art at the time the invention was made to emit light of a specific wavelength in order to increase sensitivity (column 26, lines 24-40).

***Allowable Subject Matter***

Claims 5, 9, 10, 15-17, and 23-26 are allowed.

Claims 5, 9, 10, 15-17, and 23-26 are neither anticipated or made obvious by the prior art of record.

In regard to claim 5, the prior art fails to disclose the process as set forth in combination with sending to the client system information indicating that the bubble content is greater than an authorized maximum content when the counter exceeds a predefined alarm value over a period greater than a predefined time delay period.

In regard to claim 9, the prior art fails to disclose the process as set forth in combination with periodically polarizing the light source on several polarization levels.

In regard to claim 15, the prior art fails to disclose the process as set forth in combination with a system of electrodes capable of measuring the resistivity of the ambient conditions wherein the client system is informed, via the interface module by the data controlling and processing unit, that the source and the light detector are not immersed in the liquid when the system of electrodes identifies the ambient conditions as not being liquid.

Art Unit: 2878

In regard to claim 23, the prior art fails to disclose the process as set forth in combination with the client system is informed, via the interface module by the data controlling and processing unit, that the source and the light detector are not immersed in the liquid when the polarization value of the light source is lower than a predefined threshold value  $T$ , known as the polarization alarm threshold value.

Claims 6, 13, 14, and 20-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 6, 13, 14, and 20-22 are neither anticipated or made obvious by the prior art of record.

In regard to claim 6, the prior art fails to disclose the process as set forth in combination with ceasing sending to the client system information indicating the bubble content is greater than the authorized maximum when the warning counter is less than a predefined final alarm value.

In regard to claims 13 and 20, the prior art fails to disclose the process as set forth in combination with a temperature measuring element and at least one switch linked to the temperature measuring element, wherein the switch is capable of changing state during the detection of a gas bubble.

***Response to Arguments***

Applicant's arguments with respect to claims 1-4, 7, 8, 11, 12, 18, 19, and 27 have been considered but are moot in view of the new ground(s) of rejection.

Examiner holds that it would be obvious to one of ordinary skill to apply the invention to a water circuit for cooling an internal combustion engine. This is supported by Applicant's disclosure stating, [I]t is well known to detect the presence of gas bubbles for example in a cooling system . . ." Furthermore, assuming arguendo that it would not be obvious, the application to cooling systems is merely an intended use. The prior art discussed above is structurally the same and can therefore perform all of the limitations above.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Livedalen whose telephone number is (571) 272-2715. The examiner can normally be reached on 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571) 272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2878

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



THANH X. LUU  
PRIMARY EXAMINER

bjl